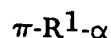


CLAIMS

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ART 34 AMDT

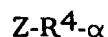
What is claimed is:

1. A functional polymer that is defined by the formula



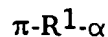
5 where π is a polymer chain, R^1 is a bond or a divalent organic group, and α is a sulfur-containing heterocycle.

2. A method for preparing a functional polymer, the method comprising:
terminating a living polymer chain with a functionalizing agent where
10 the functionalizing agent is defined by the formula



15 where Z is a leaving group or an addition group, R^4 is a bond or a divalent organic group, and α is a sulfur-containing heterocycle.

3. A vulcanizate prepared by:
vulcanizing a rubber formulation comprising at least one vulcanizable
rubber and a filler, where the at least one vulcanizable rubber is a functional
20 polymer that is defined by the formula

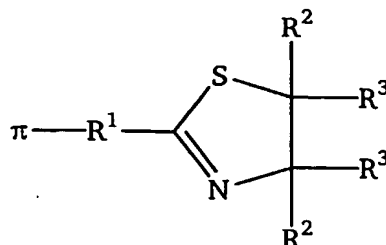


25 where π is a polymer chain, R^1 is a bond or a divalent organic group, and α is a sulfur-containing heterocycle.

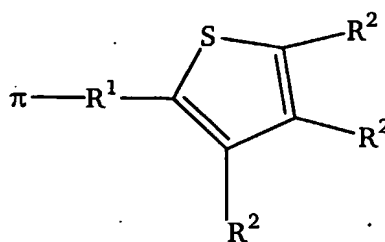
4. The polymer of claim 1, or the method of claim 2, or the vulcanizate of claim
3, where the sulfur-containing heterocycle comprises a thiirane, thietane, thiolane,
thiazole, thiazoline, thiazolidine, thiadiazole, thiophene, dihydrothiophene,
30 benzothiophene, naphthothiophene, thienothiophene, thiadiazine, dithiazine,
thioxanthene, thianthrene, phenoxathiin, benzothiazole, isothiazole,

dihydroisothiazole, thienofuran, thiomorpholine, or thialdene group or a substituted form thereof.

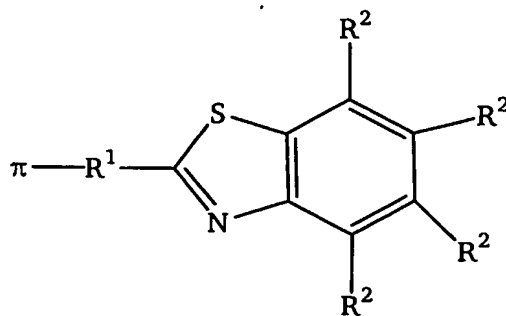
5. The polymer of claim 1, or the vulcanizate of claim 3, where the functional
5 polymer can be defined by the formula



- where π is a polymer chain, R^1 is a bond or a divalent organic group, each R^2 is
independently hydrogen or a monovalent organic group, each R^3 is independently
hydrogen or a monovalent organic group, or where each R^3 combine with each
10 other to form a divalent organic group; or

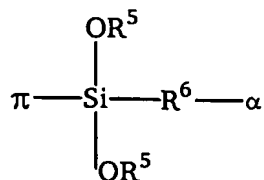


- where π is a polymer chain, R^1 is a bond or a divalent organic group, each R^2 is
independently hydrogen or a monovalent organic group, or where two or three R^2
15 groups combine to form a multivalent organic group; or



where π is a polymer chain, R^1 is a bond or a divalent organic group, and each R^2 is independently hydrogen or a monovalent organic group, or where two or three R^2 groups combine to form a multivalent organic group; or

5



where π is a polymer chain, each R^5 is independently a monovalent organic group, R^6 is a bond or a divalent organic group, and α is a sulfur-containing heterocycle.

- 10 6. The polymer of claim 1, or the method of claim 2, or the vulcanizate of claim 3, where R^1 includes the residue of an addition reaction between an addition group and a living polymer, and wherein the addition group comprises a nitrile group, a Schiff base, a ketone group, an aldehyde group, or an ester group.
- 15 7. The polymer of claim 1, or the method of claim 2, or the vulcanizate of claim 3, where the polymer chain is a rubbery polymer having a T_g that is less than 0°C .
8. The polymer of claim 1, or the method of claim 2, or the vulcanizate of claim 3, where the polymer chain is polybutadiene, polyisoprene, poly(styrene-co-butadiene), poly(styrene-co-butadiene-co-isoprene), poly(isoprene-co-styrene), or
20 poly(butadiene-co-isoprene).
9. The method of claim 2, where Z comprises a halide, a thio alkoxide group, an alkoxide group, a dialkyl amine group, a nitrile group, a Schiff base, a ketone
25 group, an aldehyde group, or an ester group.
10. The vulcanizate of claim 3, where the filler is carbon black, silica or both.